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TITLE OF THE INVENTION

DIGITAL CAMERA

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ABSTRACT OF THE DISCLOSURE

Problem: the present invention is capable of provisionally setting a custom photography camera condition of a user of a camera.

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Solution: a digital camera 1, which uses a semiconductor imaging element 24 to photograph a photographic subject, comprises a power supply input unit 8, a startup condition information storage unit 46, which stores the information pertaining to the startup condition of the camera, i.e., information that

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designates the condition of the camera when powered on by the power supply input unit, which denotes which of one or more photography modes that are provided by the system, or a custom photography mode that is set by the

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user of the camera, as being in effect when the camera is powered on, a memory unit 47, which stores the camera state that corresponds to the custom photography

mode, and a conditional setting unit 43, which, when power to the system is switched on, sets the photography mode in accordance with the startup condition information, and performs the photography mode setting in accordance with the camera conditions that are stored in the memory unit when a custom photography mode is designated.

1. Digital Camera
- 10 4. Image Display LCD Panel (TFT)
6. Control Panel
7. Release Button
8. Power Button
9. Console Key
- 15 11. OK Button
12. Photography/Image Display Mode Switch Button
21. Lens Assembly
22. Aperture Stop
23. Shutter
- 20 25. Imaging Circuit
28. Image Processing Unit
29. Buffer Memory
30. Compression - Decompression (Codec) Unit
31. Interface
- 25 32. Recording Medium
33. Display Control Unit
34. System Controller

- 35. Auto Focus Mechanism
- 41. Photography Control Unit
- 42. Power On Mode Setting Unit
- 43. Custom Condition Setting Unit
- 5 44. Image Display Control Unit
- 45. Setting Condition Storage Unit
- 46. Startup Condition Information Storage Unit
- 47. Custom Condition Storage Unit
- Custom Condition A
- 10 Custom Condition B
- #1 Strobe
- #2 Strobe Control Circuit

WHAT IS CLAIMED IS:

1. A digital camera configured to photograph a photographic subject by way of a semiconductor imaging element, comprising:

- 5 a power supply input unit;
- a startup condition storage unit configured to store an information pertaining to a startup condition of the camera, i.e., an information that designates a startup condition of the camera when powered on by the
- 10 power supply input unit, which denotes which of one or more photography modes that are provided by the camera, or a custom photography mode that is set by a user of the camera, is to be in effect when the camera is powered on;
- 15 a memory unit configured to store the camera condition that corresponds to the custom photography mode; and
- a condition setting unit configured to set the photography mode in accordance with the startup
- 20 condition information, and to perform the photography mode setting thereof in accordance with the camera condition that is stored in the memory unit when the custom photography mode is designated, when the power supply is switched on.
- 25
2. The digital camera according to claim 1, further comprising:

a camera condition storage unit configured to store a camera condition when the photography thereof is executed;

wherein:

- 5 the startup condition storage unit is further capable of storing a setting of a photography mode according to a camera condition that is stored within the camera condition storage unit immediately prior to a most recent powering off of the digital camera as the
10 startup condition information; and

- when the camera condition that is stored within the camera condition storage unit immediately prior to the most recent powering off of the digital camera is designated as the startup condition information, the
15 condition setting unit performs a photography mode setting according to the camera condition thus stored.

3. A digital camera configured to photograph a photographic subject by way of a semiconductor imaging
20 element, comprising:

- a custom photography mode designation unit configured to receive a designation of a custom photography mode that is set by a user of the camera;
 a memory unit configured to store a camera
25 condition with respect to the custom photography mode;
 and
 a condition setting unit configured to load and

set the camera condition from the memory unit that corresponds to the designation input of the custom photography mode by way of the custom photography mode designation unit.

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4. A digital camera configured to photograph a photographic subject by way of a semiconductor imaging element, and to be capable of displaying an image thus photographed, comprising:

- 10 a power supply input unit;
- a startup condition storage unit configured to store an information pertaining to a startup condition of the camera, i.e., an information that designates a startup condition of the camera when powered on by the
- 15 power supply input unit, which denotes either a basic image display condition that is provided by the camera, or a custom image display condition that is set by a user of the camera, as being in effect when the camera is powered on;
- 20 a memory unit configured to store the custom image display condition; and
- a condition setting unit configured to set an image display condition in accordance with the startup condition information, and to perform the image display
- 25 condition setting thereof in accordance with the condition that is stored in the memory unit when the custom image display condition is designated, when the

power supply is switched on.

5. A digital camera configured to photograph a photographic subject by way of a semiconductor imaging element, and to be capable of displaying an image thus photographed, comprising:

a custom image display condition designation unit configured to receive a designation of a custom image display condition that is set by a user of the camera;

a memory unit configured to store the custom image display condition; and

- a condition setting unit configured to load and set the custom image display condition from the memory unit that corresponds to the designation input of the custom image display condition by way of the custom image display condition designation unit.

DETAILED DESCRIPTION OF THE INVENTION

[0001]

FIELD OF THE INVENTION

The present invention relates to a digital camera, and more specifically to a digital camera characterized by a condition setting component.

[0002]

Description of the Related Art

In recent years, cameras have become

increasingly digitally sophisticated as semiconductor technology has advanced. It is becoming increasingly frequent for a camera to be capable of executing a taking of a photograph through an automatic control of
5 such as a microprocessor unit (MPU).

[0003]

With respect to an aperture stop priority photography, as an instance from among the automatic photography control thereof, when an aperture stop
10 value is designated, a shutter speed is automatically calculated in accordance with a photometry result, and a photograph taken thereupon. In addition, designating the shutter speed when in a shutter speed priority photography causes an aperture stop value that is
15 appropriate thereto to be calculated automatically. Furthermore, such as a program photography exists as well, wherein all of the aperture stop value and all of the shutter speed is automatically determined in accordance with a preset program chart.

20 [0004]

On the other hand, there are also many cameras wherein is built a manual photography mode, wherein all of such as the aperture stop value and the shutter speed is set manually.

25 [0005]

In addition to such a typical automatic mode or manual mode as described herein, Japanese Patent

Application Laid Open No. 1993-034791 discloses a technology that is capable of setting a photographic condition that is appropriate to such as a portrait view photography, a landscape view photography, or a close-up photograph, by performing a loading of a condition thereof from a bar code. In addition, Japanese Patent Application Laid Open No. 1993-260364 discloses a technology that displays a sample image, which is stored upon a recording medium, upon a digital still camera, and facilitates setting a photographic condition that corresponds to the image thus displayed. [0006]

PROBLEMS THAT THE INVENTION IS INTENDED TO SOLVE

Fundamentally, the camera photography in many instances involves a photographer setting a particular, finely detailed, photographic condition according to a personal preference or sensibility thereof. Accordingly, a circumstance may arise wherein the photographer will want to set a photographic condition that corresponds to the personal preference thereof, and to use the photographic condition thus set as a default condition thereof. [0007]

In such a circumstance, however, performing an image display in each and every such instance thereof from the bar code or the recording medium and reconfiguring the setting of the configuration thereof

is complicated and lacking in a prompt responsiveness.
In addition, when the photographic condition from the
condition that is initially loaded thereby is further
corrected, it becomes impossible to load the condition
thus corrected from the bar code or the recording
medium wherefrom the condition is already loaded.

[0008]

The present invention was devised with such a
situation as described herein in mind, and it is a
first objective thereof to provide a digital camera
that is capable of provisionally setting a custom
camera condition of a camera user for a photography
thereof.

[0009]

In addition, it is a second objective thereof to
provide a digital camera that is capable of promptly
setting the custom camera condition of the camera user
for the photography thereof.

[0010]

MEANS TO SOLVE THE PROBLEMS

A first invention to solve the problems
described herein is a digital camera that photographs a
photographic subject by way of a semiconductor imaging
element, comprising a power supply input unit, a
startup condition storage unit that stores an
information pertaining to a startup condition of the
camera, i.e., an information that designates a startup

condition of the camera when powered on by the power supply input unit, which denotes which of one or more photography modes that are provided by the camera, or a custom photography mode that is set by a user of the camera, as being in effect when the camera is powered on, a memory unit that stores the camera condition that corresponds to the custom photography mode, and a condition setting unit that sets the photography mode in accordance with the startup condition information, and that performs the photography mode setting thereof in accordance with the camera condition that is stored in the memory unit when the custom photography mode is designated, when the power supply is switched on.

[0011]

Given that the present invention incorporates such a unit as is described herein, it is possible for the custom photography setting of the user of the camera to be set provisionally, and for a camera setting to be set to the custom photography mode in accordance with such as a photography performance of an individual photographer, when the power supply to the camera is switched on. Put another way, it is possible to customize the camera at will, thus making the camera unique to a given user.

[0012]

Next, a second invention to solve the problems described herein is a digital camera that, with respect

to the first invention, further comprises a camera condition storage unit that stores a camera condition when the photography thereof is executed, and wherein a) the startup condition storage unit is further
5 capable of storing a setting of a photography mode according to a camera condition that is stored within the camera condition storage unit immediately prior to a most recent powering off of the digital camera as the startup condition information; and b) when the camera
10 condition that is stored within the camera condition storage unit immediately prior to the most recent powering off of the digital camera is designated as the startup condition information, the condition setting unit performs a photography mode setting according to
15 the camera condition thus stored.

[0013]

Given that the present invention incorporates such a unit as is described herein, it is possible to include a condition immediately prior to powering off
20 the camera within a setting option when the camera is started up.

[0014]

Next, a third invention to solve the problems described herein is a digital camera that photographs a
25 photographic subject by way of a semiconductor imaging element, comprising a custom photography mode designation unit that receives a designation of a

custom photography mode that is set by a user of the camera, a memory unit that stores a camera condition with respect to the custom photography mode, and a condition setting unit that loads and sets the camera
5 condition from the memory unit that corresponds to the designation input of the custom photography mode by way of the custom photography mode designation unit.
[0015]

Given that the present invention incorporates
10 such a unit as is described herein, it is possible to promptly set a custom photography condition of a user of a camera, even after starting up the camera.
[0016]

Next, a fourth invention to solve the problems
15 described herein is a digital camera that is configured to photograph a photographic subject by way of a semiconductor imaging element, and to be capable of displaying an image thus photographed, comprising a power supply input unit, a startup condition storage
20 unit that stores an information pertaining to a startup condition of the camera, i.e., an information that designates a startup condition of the camera when powered on by the power supply input unit, which denotes either a basic image display condition that is
25 provided by the camera, or a custom image display condition that is set by a user of the camera, as being in effect when the camera is powered on, a memory unit

that stores the custom image display condition, and a condition setting unit that sets an image display condition in accordance with the startup condition information, and that performs the image display condition setting thereof in accordance with the condition that is stored in the memory unit when the custom image display condition is designated, when the power supply is switched on.

[0017]

- 10 Given that the present invention incorporates such a unit as is described herein, it is possible to obtain an operating effect that is similar to the operating effect of the first invention with respect to an image display condition.

15 [0018]

- Next, a fifth invention to solve the problems described herein is a digital camera that is configured to photograph a photographic subject by way of a semiconductor imaging element, and to be capable of displaying an image thus photographed, comprising a custom image display condition designation unit that receives a designation of a custom image display condition that is set by a user of the camera, a memory unit that stores the custom image display condition, and a condition setting unit that loads and sets the custom image display condition from the memory unit that corresponds to the designation input of the custom

image display condition by way of the custom image display condition designation unit.

[0019]

- Given that the present invention incorporates
- 5 such a unit as is described herein, it is possible to obtain an operating effect that is similar to the operating effect of the third invention with respect to an image display condition.

[0020]

10 EMBODIMENTS OF THE INVENTION

Following is a description of embodiments of the present invention.

[0021]

First Embodiment of the Invention

- 15 Fig. 1 is an external view of a digital camera according to a first embodiment of the present invention, as viewed from above.

[0022]

- A digital camera 1 is configured of a lens
- 20 assembly 3, an image display LCD panel 4, a viewfinder 5, and a control panel 6, which is built into a housing unit 2. Furthermore, such as release button 7, a power button 8, a console key, i.e., a cross-shaped selection key, 9, a menu button 10, an OK button 11, and a
- 25 photography/image display mode switch button 12, is also built into the housing unit 2.

[0023]

From among the externally visible configuration elements described herein, the console key 9 is for performing each respective type of console input, and is configured of a cross-shaped input key that is

5 capable of an input in each of an up, down, left, and right direction. In addition, pressing the menu button 10 causes a menu screen to be displayed upon the image display LCD panel 4, and it is possible to manipulate the console key 9 and press the OK button 11 to select

10 and confirm each respective type of function thereof. The control panel 6, which is display controlled by a system controller (to be described hereinafter), displays such as a photography mode, a photography condition, or a number of photographs remaining. It is

15 to be understood that it is also possible to display the photography condition via an information panel (not shown) of the viewfinder 5, or the image display LCD panel 4, which is for displaying a recorded image.

[0024]

20 Fig. 2 is a block diagram that depicts a system configuration instance of a digital camera according to the embodiment.

[0025]

With regard to the digital camera 1, a light

25 beam from the photographic subject is incident to a CCD 24, by way of a lens assembly 21 and an aperture stop 22, and an electrical charge is accumulated upon each

respective element of the CCD 24. A mechanical shutter 23 is made to be closed when reading out from the CCD 24.

[0026]

- 5 An imaging circuit 25 is attached to the CCD 24, and such as an exposure, a reading out, an element shutter, and a power supply is controlled by the imaging circuit 25 thereof. In addition, an output from the CCD 24 is temporarily stored in a DRAM 27 after
- 10 passing through an analog - digital (A/D) conversion unit 26, and is thereafter converted, by an image processing unit 28, to a photographic still image information, which is thereafter stored in a buffer memory 29. Furthermore, a compression process, i.e.,
- 15 JPEG, is carried out thereupon by a compression-decompression (codec) unit 30, and is stored upon a recording medium 32 by way of an interface 31. The recording medium 32 is configured from such as a magneto-optical (MO) disk, a magnetic disk, or,
- 20 furthermore, a flash memory, as an instance thereof.
- [0027]

- The image that is still image processed by the image processing unit 28 is capable of being displayed, as a verification image prior to saving the image, i.e.,
- 25 an REC view, upon the image display LCD panel (TFT panel) 4 that is installed within a rear surface of the camera, by way of a display control unit 33. In

addition, a recorded image that has been temporarily stored upon the recording medium 32 is also decompression processed by the compression-decompression (codec) unit 30, is temporarily stored
 5 thereafter upon the buffer memory 29, and is furthermore capable of being displayed upon the image display LCD panel 4.
 [0028]

A system controller 34 is installed within the
 10 digital camera 1, either in order to control each respective configuration for the photography and recording operation described herein, or in order to control each respective configuration for the image display operation described herein.
 15 [0029]

The system controller 34 controls an auto focus mechanism 35, an auto exposure mechanism, the imaging circuit 25, and each other respective unit within the camera. In addition, the system controller 34 receives
 20 a console input from each respective type of console button, such as the release button 7 or the console key 9, and executes a control according to the input therefrom. Moreover, the system controller 34 causes each respective type of information to be displayed
 25 upon the control panel 6.
 [0030]

In addition, the system controller 34 comprises,

at a minimum, a photography control unit 41, a power on mode setting unit 42, a custom condition setting unit 43, an image display control unit 44, a setting condition storage unit 45, a startup condition information storage unit 46, and a custom condition storage unit 47.

[0031]

The photography control unit 41 is configured so as to be capable of a photography control process that corresponds to a manual photography mode, a program photography mode, an aperture stop priority photography mode, and a shutter speed priority photography mode. In the present circumstance, a change of a photography mode after an input of a power supply thereto is performed via the menu, by way of the console key input. The camera condition that the photography control unit 41 employs in order to execute the photography is stored in the setting condition storage unit 45.

[0032]

It is to be understood that the camera condition, as referenced herein according to the present specification, is formed from a designation of the photography mode as to which photography mode is to be used to execute the photography therewith, from among the manual photography mode, the program photography mode, the aperture stop priority photography mode, or the shutter speed priority photography mode, and from

each respective type of photography condition that is to be set for the photography mode thus designated. In addition, the photography condition includes such as a shutter speed, an aperture stop value, an exposure
5 correction value, a strobe mode condition, an ISO sensitivity setting, and a white balance condition. It is possible to input the photography condition thereof by way of the console key 9. It is further to be understood that it is also possible to perform the
10 photography with the digital camera 1 with the custom condition that the user has set, and the custom condition thereof includes a condition item that is identical to the camera condition, or, put another way, a condition item that is identical to the photography
15 mode designation information and the photography condition thereof. According to the present specification, setting the custom condition refers to the custom photography mode (hereinafter referred to as either "the custom mode" or "the custom photography
20 mode") being set as the photography mode.

[0033]

In addition, the photography control unit 41 acquires the CCD output from the analog - digital (A/D) conversion unit 26, and performs a photometry process
25 or an auto focusing process, in order to perform an exposure.

[0034]

The camera condition that is set in order to perform a following photography is stored in the setting condition storage unit 45. It is to be understood that the most recently set camera condition
 5 remains as is unless the camera condition is changed.
 [0035]

When the power button 8 is switched on, the power on mode setting unit 42 acquires, from the startup condition information storage unit 46, each
 10 respective type of information of the camera condition, on a per information category basis, that is to be set at startup, i.e., the startup condition information, and performs a directive of a setting, in accordance with each respective type of information thus acquired,
 15 upon either the photography control unit 41, or the custom condition setting unit 43. In addition, the power on mode setting unit 42 receives a change in the startup condition information by way of the menu screen that is displayed upon the image display LCD panel 4
 20 and each respective type of console button, and updates the startup condition information storage unit 46 in accordance with a result of the reception thereof.
 [0036]

The startup condition information storage unit
 25 46 stores the startup condition information. According to the embodiment, a designation information of any of the custom condition, a default condition, or a

condition immediately prior to a power supply interrupt, is stored within the startup condition information storage unit 46. According to the embodiment, it is to be understood that it is possible to further select two

5 types of settings for the custom condition, and that a custom condition A and B is present, such as is depicted within the custom condition storage unit 47. Accordingly, there exist essentially four options of the designation information. In the present

10 circumstance, according to the embodiment, a default condition is a circumstance wherein the program photography mode is designated, and wherein each respective photography condition thereof, such as the strobe or the focus, is all set automatically. In

15 addition, the condition immediately prior to the power supply interrupt is a circumstance wherein the camera condition that remains in the setting condition storage unit when the power supply was last switched off is employed. It is to be understood that, as a variant

20 embodiment thereof, it would be permissible to be able to further store a plurality of custom conditions within the custom condition storage unit 47, and to be able to select thereamong.

[0037]

25 Upon receipt of the directive from the power on mode setting unit 43 to the effect that the custom condition setting is to be performed, the custom

condition setting unit 43 sets the custom condition to the photography control unit 41. Put another way, when the custom condition is designated to the startup condition information storage unit 46, a state thereof is detected by the power on mode setting unit 42, and the custom condition setting unit 43 is notified thereof. The custom condition setting unit 43 loads the corresponding custom condition from the custom condition storage unit 47, and sets the custom condition thus loaded to the photography control unit 41 as the camera condition thereof. While the custom condition is similar to the camera condition, the photography condition therein is set in detail according to the preference of the user, and is thus customized as appropriate by the user.

[0038]

It is to be understood that it is possible for the custom condition to include the image display condition, unlike the camera condition. An instance thereof would be such as a screen number selection when performing such as an index display or a multiple screen display. When not only the photography condition, but also the image display condition, is included within the custom condition, the custom condition setting unit 43 sets a corresponding custom image display condition to the image display control unit 44.

[0039]

In addition, the custom condition setting unit 43 is capable of editing a content of the custom condition in accordance with the input of the console key, and of storing the custom condition thus edited in the custom condition storage unit 47. The receipt of the input of the custom condition thereof is performed via the menu screen that is displayed upon the LCD panel 4, in a manner similar to the receipt of the startup condition information thereof.

10 [0040]

The custom condition storage unit 47 stores the custom condition thus edited.

[0041]

When the custom condition pertaining to the image display thereof is set, the image display control unit 44 controls the display control unit 33 according to the custom condition thereof such that the custom condition thereof is accounted for upon the LCD panel display. In addition, a switch between an image display mode and a photography mode is performed by the photography/image display mode switch button 12.

20

[0042]

It is to be understood that the setting condition storage unit 45, the startup condition information storage unit 46, and the custom condition storage unit 47 is configured from a nonvolatile memory, such that a content thereof will not be lost even when

25

the power supply thereto is cut off. Each respective storage unit 45, 46, and 47 is configured from such as a flash memory, an EPROM, or an EEPROM.

[0043]

5 Following is a description of an operation of a digital camera according to the embodiment that is configured such as is described herein. Fig. 3 is a flowchart that depicts the operation of the digital camera according to the embodiment.

10 [0044]

 As depicted in Fig. 3, the process begins with step s1, wherein the power button 8 is depressed and the digital camera is powered on, whereupon, in step s2, the startup condition information is loaded from the
15 startup condition information storage unit 46 by the power on mode setting unit 42.

[0045]

 In step s3, a determination is made of the content of the startup condition information by the
20 power on mode setting unit 42, and if it is determined therein that a default designation information is set, then, in step s4, a default condition is set to the photography control unit 41. The default condition is a condition wherein the program photography mode is
25 designated, and each respective type of photography condition is all set automatically, as described herein.

[0046]

In addition, if it is determined in step s3 that a custom condition designation information is set, then the custom condition setting unit 43 is notified by the power on mode setting unit 42. Furthermore, in step s5,
 5 the custom condition thus designated is loaded from the custom condition storage unit 47 by the custom condition setting unit 43, and the custom condition thus loaded is set to the photography control unit 41.
 [0047]

10 Moreover, if it is determined in step s3 that an immediately prior to the power supply being cut condition designation information is set, then the power on mode setting unit 42 notifies the photography control unit 41 to set the immediately prior to the
 15 power supply being cut condition thereof. The camera condition immediately prior to the power supply being cut remains within the setting condition storage unit 45, and thus, the corresponding condition thereof is used as is, in step s6.

20 [0048]

When the camera condition is set concomitant with the powering on of the camera, according to any of step s4 to step s6, then, in step s7, a determination is made as to whether a state of the camera
 25 setting is in the image display mode or the photography mode. The determination of which mode that the camera is in is made by either an initial setting when the

camera is started up, or by a mode switch that is carried out by depressing the photography/image display mode switch button 12.

[0049]

5 In the present circumstance, if it is determined
in step s7 that the camera is in the image display mode,
then, in step s8, a process is carried out for each
respective image display mode, such as displaying or
deleting an image.

10 [0050]

If the camera is in the photography mode in step s7, then, in step s9, a further determination is made as to whether or not a change input of the camera condition that contains the photography condition is present. The change of the camera condition may be directly inputted via each respective type of the console button or key, or by making a selection from the menu that is displayed upon the image display LCD panel 4. If the change input of the camera condition is present in step s9, then, in step s10, the camera condition that is corrected in accordance with the input thereof is set to the photography control unit 41.

[0051]

If step S9 is NO, or else after the change
25 process in step s10, a determination is made in step
s11 as to whether or not the release button 7 is
depressed, and if the release button 7 is depressed,

then, in step s12, the photography is executed, whereas if the release button 7 is not depressed, i.e., step s11 is NO, then the process proceeds as is to step S13. [0052]

5 Thereafter, a determination is made in step s13 as to whether or not to change the startup condition information that regulates an initial setting when the camera is powered on, and if the startup condition information is changed, then, in step s14, a condition selection is carried out via the menu screen. 10 [0053]

 If step s13 is NO, or else after the change process in step s14, a determination is made in step s15 as to whether or not a change or a setting of the 15 custom condition is present thereupon, and if the custom condition is changed or set thereupon, then a custom condition selection is inputted via such as the menu screen. [0054]

20 If step s15 is NO, or else after the change process in step s16, a determination is made in step s17 as to whether or not the power supply to the camera is switched off, and if the power supply thereof is switched off, the process terminates, whereas if the 25 power supply thereof is not switched off, the process returns to step s7. [0055]

It is to be understood that it would be permissible to interchange, as appropriate, an order of a combination of processes from step s7 to step s16, i.e.,

- 5 a combination of a determination and a process corresponding thereto.

[0056]

- Following is a more detailed description of the process of changing the startup condition in step s14, and the process of changing the custom condition in step s16, according to Fig. 3, with reference to Fig. 4.

[0057]

- Fig. 4 is a flowchart that depicts the process of changing the startup condition and the custom condition.

[0058]

- The process begins when the menu button 10 is depressed in step t1, whereupon, in step t2, a basic menu screen is displayed upon the image display LCD panel 4. A selection and acknowledgement operation, employing the console key 9 and the OK button 11, further causes a variety of types of sub menu screens to be deployed, and a startup condition setting screen and a custom condition setting screen is included within the sub menu thereof.

[0059]

The process begins when the startup condition

setting screen is selected in step t3, and displayed in step t4, whereupon a state is present wherein it is possible to select from among the default, the custom A, the custom B, or the immediately prior to the power supply being cut condition.

[0060]

In the present circumstance, when, in step t5, the startup condition is selected and acknowledged from among the four types described herein, then, in step t6, a new startup condition is stored in the startup condition information storage unit 46 by the power on mode setting unit 42.

[0061]

After setting the startup condition information, the process returns to the basic menu screen, in step t7, and proceeds thereafter to step t8. In addition, the process also proceeds to step t8 if step t3 is NO.

[0062]

Put another way, in step t8, a determination is made as to whether or not the custom condition setting screen is selected. It is to be understood that a custom condition setting process to be described hereinafter in step t8 to step t12 is in a parallel relationship with the startup condition setting process described herein in step t3 to step t7. While Fig. 4 depicts the custom condition setting process as being performed after the startup condition setting process

for ease of description therein, it would be permissible for the order of the processes thereof to be interchanged as well.

[0063]

- 5 When the custom condition setting screen is selected in step t8, and the screen thereof is displayed in step t9, then a state is present wherein it is possible to further select from among the custom condition A and the custom condition B.

10 [0064]

- In the present circumstance, in step t10, when either of the custom condition A or the custom condition B is selected, an input of the condition thus selected is carried out. In response to the input
15 thereof, in step t11, either a new custom condition, when the A, the B, etc., is not set, or a corrected custom condition, when the custom condition thereof is already set, is stored in the custom condition storage unit 47 by the custom condition setting unit 43.

20 [0065]

- After the startup condition information is set, the process returns to the basic menu screen in step t12, and proceeds to step t13. In addition, the process also proceeds to step t13 even if step t8 is NO.

25 [0066]

 In step t13, if the selection of either the startup condition setting screen or the custom

condition setting screen is carried out again, the process proceeds to either step t3 or step t8 and the process described herein is carried out. If the sub menu selection is not carried out herein, the process
5 terminates.

[0067]

As described herein, the digital camera according to the embodiment of the present invention incorporates the power on mode setting unit 42 and the
10 startup condition information storage unit 46, and it would thus be possible to provisionally set the photography mode setting when the power supply to the camera is switched on, and to start up the camera in a designated mode, even with respect to a compact camera
15 that does not make a particular use of such as a mode dial.

[0068]

In addition, the digital camera according to the embodiment of the present invention incorporates the
20 custom condition setting unit 43 and the custom condition storage unit 47, and it would thus be possible to set the custom mode, i.e., the custom photography mode, when the system is started up. Put another way, according to the present invention, it is
25 possible to set a camera condition, such as the photography condition, in accordance with such as a photography performance of an individual photographer,

and thus, it is possible to add a customized photography mode to the photography mode that is designated for the startup of the camera. It is thereby possible to provisionally set a custom photographic camera condition for the user of the camera, thus making it possible to customize the camera at will. It is to be understood that it is also possible to customize the image display mode in a similar manner thereto.

10 [0069]

Second Embodiment of the Invention

Fig. 5 is an external view of a digital camera according to a second embodiment of the present invention, as viewed from above, and a component depicted in Fig. 5 that is identical to a component depicted in Fig. 2 will be labeled with an identical reference number, and a description thereof will be omitted herein.

[0070]

20 While a digital camera 1' according to the embodiment does not comprise a photography/image display mode switch button 12, it does comprise a mode dial 14 and a custom button 15 instead. The mode dial 14 is a dial for switching between a program photography mode (P), an aperture stop priority photography mode (A), a shutter speed priority photography mode (S), and a manual photography mode (M).

[0071]

Fig. 6 is a block diagram that depicts a system configuration instance of a digital camera according to the embodiment, and a component depicted in Fig. 6 that is identical to a component depicted in Fig. 2 will be labeled with an identical reference number, and a description thereof will be omitted herein.

[0072]

The digital camera 1' according to the embodiment differs from the first embodiment by starting up in a photography mode that is set by the mode dial, rather than starting up by the photography mode that is preset when the camera is powered on. Accordingly, a power on mode setting unit 42 and a startup condition information storage unit 46, as depicted in Fig. 2, is not built into a system controller 34' herein.

[0073]

In addition, according to the embodiment, the custom button 15 is built into the digital camera 1', as a dedicated button for calling up the custom condition, and when the custom button 15 is depressed, the custom condition is loaded from the custom condition setting unit 43. The condition thus loaded is set to either the photography control unit 41 or the image display control unit 44. It is to be understood that, as a variant embodiment thereof, a configuration

would be permissible wherein the loading of the custom condition thereof would only take effect when depressing the custom button 15 while holding down the OK button 11, in order to avoid a mistake in operating
5 a control of the camera.

[0074]

Aside from the difference described herein, the digital camera 1' according to the embodiment is configured as a system in a manner similar to the
10 digital camera 1 according to the first embodiment.

[0075]

Following is a description of an operation of a digital camera according to the embodiment that is configured such as is described herein. Fig. 7 is a
15 flowchart that depicts the operation of the digital camera according to the embodiment.

[0076]

The process begins with step v1, wherein the power supply of the camera is switched on, whereupon,
20 in step v2, a startup process of the system commences according to a position of the mode dial when the power supply of the camera is switched on.

[0077]

If, in step v3, the position of the dial is an
25 image display position, then, in step v4, the camera is in the image display mode, and the process of the image display mode is executed.

[0078]

If, on the other hand, the position of the dial is any of the photography mode, then, in step v5, a mode that corresponds to the program photography mode
 5 (P), the aperture stop priority photography mode (A), the shutter speed priority photography mode (S), or the manual photography mode (M), is set.

[0079]

Next, in step v6, a determination is made as to
 10 whether or not the custom button 15 is depressed. If the custom button 15 is depressed, the custom condition setting unit 43 is notified thereof, and the custom condition that is in effect at the present time, i.e., either of the A or the B thereof, is loaded from the
 15 custom condition storage unit 47. In step v7, the condition thus loaded is set to either the photography control unit 41 or the image display control unit 44, by the custom condition setting unit 43.

[0080]

20 Next, in step v8, a determination is made as to whether or not a change is made to the camera condition. The camera condition that is checked in the present circumstance is a camera condition other than a condition that is set by the mode dial 14.

25 [0081]

A process from step v8 to step v13 herein is similar to step s9 to step s16 in Fig. 3, excepting

step s13 and step s14 therein, as well as Fig. 4, excepting step t3 to step t7 therein, and thus, a detailed description thereof will be omitted herein. It is to be understood that the custom condition is also
5 contained within a condition that is to be set with the mode dial 14. In addition, a selection of what will become the custom condition that is in effect is also performed with respect to the custom button 15 in step t10 of Fig. 4.

10 [0082]

Next, in step v14, a determination is made as to whether or not the mode dial 14 is being operated. If the mode dial 14 is not being operated in step v14, then the process proceeds to step v15, whereas if the
15 mode dial 14 is being operated in step v14, the process returns to step v3.

[0083]

When the camera is set to the custom condition at a time when the mode dial 14 is operated, it is to
20 be understood that the custom condition is canceled with respect to the photography/video display mode, and the setting of the mode dial 14 is followed instead, as per step v4 and step v5. Put another way, if the custom button 15 is depressed in step v6 when any of the
25 photography mode, such as the aperture stop priority photography mode, is set, the camera is set to the photography mode according to the custom condition,

such as the shutter speed priority photography mode, irrespective of the setting state of the mode dial 14. In such a circumstance, it is possible for a state to arise wherein an apparent mode according to the mode dial 14 differs from an actually set mode, i.e., a mode mismatch state may occur. In response thereto, the mode of the custom condition is canceled if the custom button 15 is moved. When the mode mismatch state occurs, it is to be understood that an indication that the camera is in the custom mode, as well as the actual photography mode in effect at the present time, is displayed via the control panel 6, an information panel of the viewfinder 5, and the image display LCD panel 4. [0084]

Next, when the process proceeds from step v14 to step v15, the process terminates if the camera is powered off, and returns to step v3 if the camera is not powered off. [0082]

As described herein, the custom button 15 is installed into the digital camera according to the embodiment of the present invention, and the custom condition is loaded and set by operating the custom button 15, thereby allowing promptly setting the camera condition for the custom photography setting of the user of the camera at any time after starting up the system. Put another way, after the camera is powered on,

it is possible to load and set the custom condition in a single step by way of the custom button. It is also possible to customize the image display mode in a manner similar to the customization of the photography mode.

5 [0086]

It is to be understood that the present invention is not restricted to the embodiments described herein, and it would be possible to alter the present invention in a variety of ways that do not exceed the scope of the fundamental principles thereof. In addition, it would also be permissible for each respective embodiment to be combined as appropriate and to the extent possible, and it would be possible to obtain a combined effect thereof in such a circumstance.

10 As an instance thereof, whereas according to the first embodiment and the second embodiment, an embodiment of the camera, etc., such as a positioning of the button or the dial thereof, as well as a combination of the lens assembly thereof, may vary to a greater or a lesser extent, it is possible to combine such an element thereof as appropriate. Accordingly, it is also possible to embed a function according to the mode dial 14 or the custom button 15 within the first embodiment.

15 20 25 [0087]

In addition, it would be possible either for the technique disclosed according to the embodiments to be

stored upon a recording medium, such as a magnetic disk, i.e., a floppy disk, a hard disk, etc., an optical disc, i.e., a CD-ROM, a DVD, an MO, etc., or a semiconductor memory, such as a ROM, a RAM, a flash memory, etc., or

5 to be transmitted and distributed by way of a telecommunications medium, as a program, i.e., a software device, that is capable of being executed upon a calculation device, i.e., a computer. It is to be understood that the program that is stored upon the

10 recording medium includes a setting program that configures, within the calculation device, the software device that is executed upon the calculation device, and which also includes a table or a data configuration in addition to the executable program thereof. The

15 calculation device that implements the present apparatus either loads the program that is recorded upon the recording medium, or else, depending on a circumstance thereof, builds the software device by way of the setting program, and executes the process

20 described herein by having an operation thereof controlled by the software device thereof, in either circumstance. It is to be understood that the recording device according to the present specification is not restricted to a recording medium for distribution, and

25 includes a recording medium such as a magnetic disk or a semiconductor memory, which is installed either within the calculation device or within a device that

is connected to the calculation device by way of a network.

[0088]

EFFECT OF THE INVENTION

5 According to the present invention as described herein, it would be possible to provide a digital camera that is capable of provisionally setting a custom photography camera condition of a user of a camera.

10 [0089]

 In addition, according to the present invention, it would be possible to provide a digital camera that is capable of promptly setting a custom photography camera condition of a user of a camera.

15

BRIEF DESCRIPTION OF THE DRAWINGS

 Fig. 1 is an external view of a digital camera according to a first embodiment of the present invention, as viewed from above.

20

 Fig. 2 is a block diagram that depicts a system configuration instance of a digital camera according to the first embodiment.

 Fig. 3 is a flowchart that depicts an operation of the digital camera according to the first embodiment.

25

 Fig. 4 is a flowchart that depicts a process of changing a startup condition and a custom condition.

 Fig. 5 is an external view of a digital camera

according to a second embodiment of the present invention, as viewed from above.

Fig. 6 is a block diagram that depicts a system configuration instance of a digital camera according to the second embodiment.

Fig. 7 is a flowchart that depicts an operation of the digital camera according to the second embodiment.

10 DESCRIPTION OF REFERENCE NUMERALS

- 1. Digital Camera
- 2. Housing Unit
- 3. Lens Assembly
- 4. Image Display LCD Panel
- 15 5. Viewfinder
- 6. Control Panel
- 7. Release Button
- 8. Power Button
- 9. Console Key
- 20 10. Menu Button
- 11. OK Button
- 12. Photography/Image Display Mode Switch Button
- 14. Mode Dial
- 15. Custom Button
- 25 21. Lens Assembly
- 22. Aperture Stop
- 23. Shutter

- 24. CCD
- 25. Imaging Circuit
- 26. Analog - Digital (A/D) Conversion Unit
- 27. DRAM
- 5 28. Image Processing Unit
- 29. Buffer Memory
- 30. Compression - Decompression (Codec) Unit
- 31. Interface
- 32. Recording Medium
- 10 33. Display Control Unit
- 34. System Controller
- 35. Auto Focus Mechanism
- 41. Photography Control Unit
- 42. Power On Mode Setting Unit
- 15 43. Custom Condition Setting Unit
- 44. Image Display Control Unit
- 45. Setting Condition Storage Unit
- 46. Startup Condition Information Storage Unit
- 47. Custom Condition Storage Unit

20

DRAWINGS

Fig. 1

- 2. Housing Unit
- 5 3. Lens Assembly
- 4. LCD Panel
- 5. Viewfinder
- 6. Control Panel
- 7. Release Button
- 10 8. Power Button
- 9. Console Key (Cross-shaped Key)
- 10. Menu Button
- 11. OK Button
- 12. Photography/Image Display Mode Switch Button
- 15

Fig. 2

- 1. Digital Camera
- 4. Image Display LCD Panel (TFT)
- 6. Control Panel
- 20 7. Release Button
- 8. Power Button
- 9. Console Key
- 11. OK Button
- 12. Photography/Image Display Mode Switch Button
- 25 21. Lens Assembly
- 22. Aperture Stop
- 23. Shutter

- 25. Imaging Circuit
- 28. Image Processing Unit
- 29. Buffer Memory
- 30. Compression - Decompression (Codec) Unit
- 5 31. Interface
- 32. Recording Medium
- 33. Display Control Unit
- 34. System Controller
- 35. Auto Focus Mechanism
- 10 41. Photography Control Unit
- 42. Power On Mode Setting Unit
- 43. Custom Condition Setting Unit
- 44. Image Display Control Unit
- 45. Setting Condition Storage Unit
- 15 46. Startup Condition Information Storage Unit
- 47. Custom Condition Storage Unit
- Custom Condition A
- Custom Condition B
- #1 Strobe
- 20 #2 Strobe Control Circuit

Fig. 3

#1 START

- S1. Is Camera Powered On?
- 25 S2. Load Startup Condition Information
- S3. Is Startup Condition Information Any of Default,
Custom, or Immediately Prior to Power Supply Being Cut

Condition?

#3 Default

S4. Set to Default Condition (Photography Program,
Strobe, Focus, Etc., Being Auto, Etc.)

5 S5. Set to Custom Condition

#4 Immediately Prior to Power Supply Being Cut

S6. Set to Camera Condition Immediately Prior to Power
Supply Being Cut Condition

S7. Is Mode Set to Image Display Mode or Photography

10 Mode?

#5 Image Display Mode

S8. Process in Image Display Mode (Including Change of
Custom Condition)

#6 Photography Mode

15 S9. Is Change Present in Camera Condition?

S10. Change Camera Condition

S11. Is Release Button Depressed?

S12. Execute Photography

S13. Change Startup Condition?

20 S14. Change Startup Condition?

S15. Is Change, Setting, of Custom Condition Present?

S16. Change Custom Photography Condition

S17. Is Camera Powered Off?

#2 END

25

Fig. 4

#1 Change of Startup Condition or Custom Condition

#2 START

t1. Is Menu Button Depressed?

t2. Display Menu Screen (Basic Menu)

t3. Is Startup Condition Setting Screen Selected?

5 t4. Display Startup Condition Setting Screen

t5. Select Startup Condition:

Default, Custom A, Custom B, Etc.

Immediately Prior to Power Supply Being Cut

t6. Store Condition in Startup Condition Information

10 Storage Unit

t7. Return to Basic Menu Screen

t8. Is Custom Condition Setting Screen Selected?

t9. Display Custom Condition Setting Screen

t10. Select Custom A, Custom B, Etc.

15 t11. Set, Store Custom Condition

t12. Return to Basic Menu Screen

t13. Is Further Menu Selection Performed Once More?

#3 END

20 Fig. 5

2. Housing Unit

4. LCD Panel

5. Viewfinder

6. Control Panel

25 7. Release Button

8. Power Button

9. Console Key (Cross-shaped Key)

- 10. Menu Button
- 11. OK Button
- 14. Mode Dial
- 15. Custom Button
- 5 #1 Zoom Ring
- #2 Focus Ring
- #3 Strobe Housing Unit

Fig. 6

- 10 1'. Digital Camera
- 4. Image Display LCD Panel (TFT)
- 6. Control Panel
- 7. Release Button
- 9. Console Key
- 15 14. Mode Dial
- 15. Custom Button
- 21. Lens Assembly
- 22. Aperture Stop
- 23. Shutter
- 20 25. Imaging Circuit
- 28. Image Processing Unit
- 29. Buffer Memory
- 30. Compression - Decompression (Codec) Unit
- 31. Interface
- 25 32. Recording Medium
- 33. Display Control Unit
- 34. System Controller

- 35. Auto Focus Mechanism
- 41. Photography Control Unit
- 43. Custom Condition Setting Unit
- 44. Image Display Control Unit
- 5 45. Setting Condition Storage Unit
- 47. Custom Condition Storage Unit
- Custom Condition A
- Custom Condition B
- #1 Strobe
- 10 #2 Strobe Control Circuit

Fig. 7

- #1 START
- V1. Is Camera Powered On?
- 15 V2. Commence System Startup According to Position of Mode Dial
- V3. Is Mode Set to Image Display Mode or Photography Mode?
- #3 Image Display Mode
- 20 V4. Process in Image Display Mode (Including Change of Custom Condition)
- #4 Photography Mode
- V5. Set Camera to Photography Mode Corresponding to Position of Mode Dial
- 25 V6. Is Custom Button Depressed?
- S7. Set Camera to Custom Condition
- V8. Is Change Present in Other Camera Condition?

- V9. Change Other Camera Condition
- V10. Is Release Button Depressed?
- V11. Execute Photography
- V12. Is Change, Setting, of Custom Condition Present?
- 5 V13. Change Custom Photography Condition
- V14. Is Mod Dial Being Operated?
- V15. Is Camera Powered Off?
- #2 END

10

メラ使用者の個人的な撮影用カメラ条件を予約的に設定することができる電子カメラを提供することができる。

【0089】また、本発明によれば、カメラ使用者の個人的な撮影用カメラ条件を迅速に設定することができる電子カメラを提供することができる。

【図面の簡単な説明】

【図1】本発明の第1の実施形態に係る電子カメラを上方から見た外観図。

【図2】同実施形態における電子カメラのシステム構成例を示すブロック図。

【図3】同実施形態における電子カメラの動作を示す流れ図。

【図4】立上条件及びカスタム条件の変更処理を示す流れ図。

【図5】本発明の第2の実施形態に係る電子カメラを上方から見た外観図。

【図6】同実施形態における電子カメラのシステム構成例を示すブロック図。

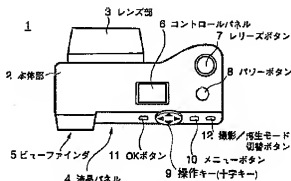
【図7】同実施形態における電子カメラの動作を示す流れ図。

【符号の説明】

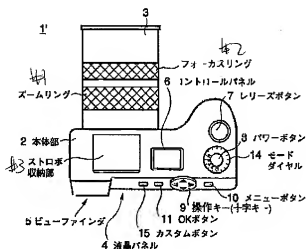
- 1…電子カメラ
- 2…本体部
- 3…レンズ系
- 4…再生用液晶パネル
- 5…ビューファインダ
- 6…コントロールパネル
- 7…リリースボタン
- 8…パワーボタン
- 9…操作キー(十字キー)
- 10…メニューボタン
- 11…OKボタン
- 12…撮影/再生モード切替ボタン

- 9…操作キー
- 10…メニューボタン
- 11…確定ボタン
- 12…撮影/再生モード切替ボタン
- 14…モードダイヤル
- 15…カスタムボタン
- 21…レンズ系
- 22…絞り
- 23…シャッター
- 24…CCD
- 25…撮像回路
- 26…A/D変換器
- 27…DRAM
- 28…画像処理部
- 29…バッファメモリ
- 30…圧縮伸長部
- 31…インタフェース
- 32…記録媒体
- 33…表示制御部
- 34…システムコントローラ
- 35…AF機構
- 41…撮影制御部
- 42…パワーオン時モード設定部
- 43…カスタム条件設定部
- 44…再生制御部
- 45…設定条件格納部
- 46…立上条件情報格納部
- 47…カスタム条件格納部

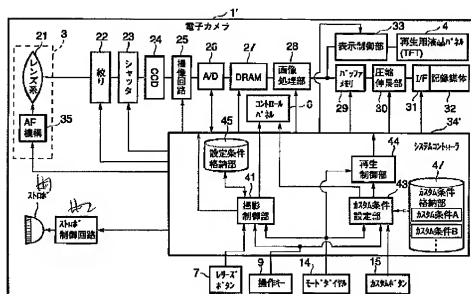
【図1】



【図5】



【図6】



【図7】

